

Factor each Trinomial into two binomials

1.  $x^2 - 7x + 12 = (x-3)(x-4)$

2.  $x^2 - 13x + 12 = (x-1)(x-12)$

3.  $x^2 + x - 12 = (x+4)(x-3)$

4.  $x^2 - x - 12 = (x+3)(x-4)$

5.  $x^2 + 8x + 12 = (x+2)(x+6)$

6.  $x^2 - 4x - 12 = (x-6)(x+2)$

7.  $x^2 + x + 3 = \text{Prime}$

8.  $x^2 - 5x + 6 = (x-2)(x-3)$

9.  $x^2 - 5x - 6 = (x-6)(x+1)$

Written Exercise

Factor each Trinomial into two binomials

(A)

1)  $7x^2 - 12x + 5 = (7x-5)(x-1)$  2)  $5y^2 - 36y + 7 = (5y-1)(y-7)$

3)  $5y^2 + 14y - 3 = (5y-1)(y+3)$  4)  $7n^2 + 4n - 11 = (7n+11)(n-1)$

5)  $5a^2 - 54a - 11 = (5a+1)(a-11)$  6)  $3x^2 - 10x - 3 = (3x-13)(x+1)$

7)  $6x^2 - 7x - 2 = \text{Prime}$  8)  $8n^2 + 14n + 3 = (2n+3)(4n+1)$

9)  $2a^2 + a - 10 = (2a+5)(a-2)$  10)  $2x^2 - 11x + 14 = (2x-7)(x-2)$

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A continued

$$11) 5x^2 - 28x + 15 = (5x - 3)(x - 5) \quad 12) 3y^2 + 11y + 6 = (3y + 2)(y + 3)$$

$$13) 9a^2 + 18a + 8 = (3a + 4)(3a + 2) \quad 14) 6t^2 - 11t - 10 = (3t + 2)(2t - 5)$$

$$15) 4c^2 - 15c + 9 = (4c - 3)(c - 3) \quad 16) 15n^2 + 7n - 4 = (5n + 4)(3n - 1)$$

$$17) x^2 + 4xy - 12y^2 = (x + 6y)(x - 2y) \quad 18) x^2 + 13xy + 36y^2 = (x + 9y)(x + 4y)$$

$$19) x^2 - xy - 12y^2 = (x - 4y)(x + 3y) \quad 20) 8a^2 - 2ab - b^2 = (4a + b)(2a - b)$$

$$21) 15c^2 - 8cd + d^2 = (5c - d)(3c - d) \quad 22) 21m^2 + 10mn + n^2 = (7m + n)(3m + n)$$

$$23) x^4 - 9x^2 + 14 = (x^2 - 7)(x^2 - 2) \quad 24) n^4 + 8n^2 + 15 = (n^2 + 3)(n^2 + 5)$$

$$25) a^4 - 3a^2 - 18 = (a^2 - 6)(a^2 - 3) \quad 26) 10c^4 + 3c^2 - 1 = (5c^2 - 1)(2c^2 + 1)$$

$$27) 15a^4 + 16a^2 - 7 = (3a^2 - 1)(5a^2 + 7) \quad 28) 21d^4 - 8d^2 - 5 = (7d^2 - 5)(3d^2 + 1)$$

$$29) x^2 - 14x - 72 = (x - 18)(x + 4) \quad 30) 72x^2 + 21x - 1 = (24x - 1)(3x + 1)$$

$$31) 64y^2 - 12y - 1 = (16y + 1)(4y - 1) \quad 32) 8a^2 - 5a - 10 = \text{Prime}$$

$$33) y^2 + 30y - 64 = (y + 32)(y - 2)$$

(B)  $34) 10x^2 + 23x + 12 = (2x + 3)(5x + 4) \quad 35) 12n^2 - 17n + 6 = (4n - 3)(3n - 2)$

$$36) 12y^2 - 8y - 15 = (6y + 5)(2y - 3) \quad 37) 18a^2 - 35a + 12 = (9a + 4)(2a + 3)$$

$$38) 24x^2 - 46x - 35 = (2x - 5)(12x + 7) \quad 39) 16n^2 + 10n - 21 = (8n - 7)(2n + 3)$$

$$40) 20c^2 - 48c + 27 = (10c - 9)(2c - 3) \quad 41) 24a^2 - 5a - 36 = (8a + 9)(3a - 4)$$

$$42) 6y^2 + 4yz - 12z^2 = (2y + 3z)(3y - 4z) \quad 43) 5x^2 + 4xy - 12y^2 = (5x - 6y)(x + 2y)$$

split the middle term

$$73) x^2 + (m+n)x + mn \\ (x+m)(x+n)$$

$$74) acx^2 + (ad+bc)x + bd \\ (ax+b)(ax+d)$$

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$$52) 2x^4y^4 - 7x^2y^2 + 6 \\ (2x^2y^2 - 3)(x^2y^2 - 2)$$

$$53) 3a^4b^4 - a^2b^2 - 10 \\ (3a^2b^2 + 5)(a^2b^2 - 2)$$

$$54) 5m^4n^4 + 4m^2n^2 - 12 \\ (5m^2n^2 - 6)(m^2n^2 + 2)$$

$$55) 6c^4d^4 + 23c^2d^2 + 21 \\ (3c^2d^2 + 4)(2c^2d^2 + 5)$$

$$56) 5x^4 + 23x^2y^2 + 24y^4 \\ (5x^2 + 8y^2)(x^2 + 3y^2)$$

$$57) 14c^4 - 9c^2d^2 - 18d^4 \\ (7c^2 + 6d^2)(2c^2 - 3d^2)$$

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$$58) 2x^8 + 2x^4 - 1 \\ \text{Prime}$$

$$59) x^6 - 7x^3y^2 + 6y^4 \\ (x^3 - 1y^2)(x^3 - 6y^2)$$

$$60) 5m^4 - 4m^2n^3 - n^6 \\ (5m^2 + n^3)(m^2 - n^3)$$

$$61) x^{6m} - 7x^{3m} + 12 \\ (x^{3m} - 4)(x^{3m} - 3)$$

$$62) 6x^{2m} + 19x^m + 15 \\ (3x^m + 5)(2x^m + 3)$$

$$63) 9x^{4m} + 24x^{2m} - 20 \\ (3x^{2m} - 2)(3x^{2m} + 10)$$

$$64) 8x^{6m} - 2x^{3m} - 21 \\ (2x^{3m} + 3)(4x^{3m} - 7)$$

$$65) 5x^2a + 23xy^2 + 12y^2b \\ (5x^2 + 3y^2)(x^2 + 4y^2)$$

$$66) 8x^{4a} - 26x^{2a}y^{2b} + 15y^{4b} \\ (4x^{2a} - 15y^{2b})(2x^{2a} + y^{2b})$$

$$67) 12x^{6a} - 8x^{3a}y^{2b} - 15y^{4b} \\ (6x^{3a} + 5y^{2b})(2x^{3a} - 3y^{2b})$$

$$68) x^{2n+4} + 7x^{n+2} + 12 \\ (x^{n+2} + 4)(x^{n+2} + 3)$$

$$69) x^{2n-2} + 3x^{n-1} - 10 \\ (x^{n-1} + 5)(x^{n-1} - 2)$$

$$70) x^{8n+6} - 2x^{4n+3} - 3 \\ (x^{4n+3} - 3)(x^{4n+3} + 1)$$

$$71) x^{2a+6} + 2x^{a+3}y^{a-2} + y^{2a-4} \\ (x^{a+3} + y^{a-2})(x^{a+3} + y^{a-2})$$

$$72) 2x^{2a+2} + 5x^{a+1}y^a + 3y^{2a} \\ (x^{a+1} + y^a)(2x^{a+1} + 3y^a)$$